

5 We claim:

1. A method for forwarding multicast packets by a module in a communication system having a plurality of cooperating modules, each module including at least one network interface for supporting directly connected multicast devices and an inter-module communication interface for communicating with remote modules, the method
10 comprising:

determining that a remote module is associated with a multicast stream;
receiving a multicast packet associated with the multicast stream from a network interface; and

15 forwarding the multicast packet to the remote module over the inter-module communication interface.

2. The method of claim 1, wherein determining that the remote module is associated with the multicast stream comprises:

20 receiving an IGMP message from the remote module over the inter-module communication interface.

3. The method of claim 1, further comprising:

25 maintaining a forwarding interface list indicating all network interfaces and remote modules that are associated with the multicast stream;

determining that the multicast stream is supported on at least one network interface of the remote module; and

adding the remote module to the forwarding interface list upon determining that the multicast stream is supported on at least one network interface of the remote module.

30 4. The method of claim 3, further comprising:

determining that the remote module is not a cooperating module; and
removing the remote module from the forwarding interface list.

-26-

- 5 5. The method of claim 3, further comprising:
reconfiguring the module to operate in a stand-alone mode of operation; and
removing all remote modules from the forwarding interface list.
- 10 6. The method of claim 1, further comprising:
determining that a network interface is associated with the multicast stream;
receiving a multicast packet associated with the multicast stream from the remote
module over the inter-module communication interface; and
forwarding the multicast packet to the network interface.
- 15 7. The method of claim 1, further comprising:
receiving an IGMP message from the network interface; and
forwarding the IGMP message to all remote modules over the inter-module
communication interface.

-27-

5 8. A method for sending IGMP messages by a device in a communication system, the method comprising:

 receiving a first IGMP message including a multicast device address; and

 sending a second IGMP message using the multicast device address from the first IGMP message.

10

9. The method of claim 8, wherein the multicast device address is a multicast host address, and wherein the second IGMP message is an IGMP report message.

10. The method of claim 8, wherein the multicast device address is a multicast router address, and wherein the second IGMP message is an IGMP query message.

15

-28-

5 11. A method for sending IGMP messages by a device in a communication system, the device including an interface, the method comprising:

 receiving a plurality of IGMP messages over the interface, wherein each IGMP message received over the interface is one of an IGMP version 1 message and an IGMP version 2 message; and

10 sending an IGMP version 1 message over the interface if at least one of the plurality of IGMP messages received over the interface is an IGMP version 1 message.

12. The method of claim 11, further comprising:

15 sending an IGMP version 2 message over the interface if and only if each of the plurality of IGMP messages received over the interface is an IGMP version 2 message.

-29-

5 13. A module for forwarding multicast packets in a communication system having a plurality of cooperating modules, the module comprising:
 at least one network interface for supporting directly connected multicast devices;
 an inter-module communication interface for communicating with remote modules;
 and

10 switching logic operably coupled to receive a first multicast packet from a network interface, determine a first multicast stream for the first multicast packet, and forward the first multicast packet to all remote modules that are associated with the first multicast stream over the inter-module communication interface.

15 14. The module of claim 13, further comprising a forwarding interface list indicating all remote modules that are associated with the first multicast stream.

20 15. The module of claim 14, wherein the switching logic is operably coupled to forward the first multicast packet to all remote modules that are indicated in the forwarding interface list.

25 16. The module of claim 13, further comprising snooping logic operably coupled to determine remote modules that are associated with the first multicast stream based upon IGMP messages received from the remote modules.

30 17. The module of claim 16, wherein the snooping logic is operably coupled to receive an IGMP message from a remote module and add the remote module to a forwarding interface list.

35 18. The module of claim 13, wherein the switching logic is operably coupled to receive a second multicast packet from a remote module over the inter-module communication interface, determine a second multicast stream for the multicast packet, and forward the second multicast packet to all network interfaces that are associated with the second multicast stream.

-30-

5 19. The module of claim 18, further comprising a forwarding interface list indicating all network interfaces that are associated with the second multicast stream.

10 20. The module of claim 19, wherein the switching logic is operably coupled to forward the second multicast packet to all network interfaces that are indicated in the forwarding interface list.

15 21. The module of claim 18, further comprising snooping logic operably coupled to determine network interfaces that are associated with the second multicast stream based upon IGMP messages received from the network interfaces.

22. The module of claim 21, wherein the snooping logic is operably coupled to receive an IGMP message from a network interface and add the network interface to a forwarding interface list.

-31-

5 23. A device for sending IGMP messages in a communication system, the device comprising:

 receiving logic operably coupled to receive a first IGMP message including a multicast device address; and

 sending logic operably coupled to send a second IGMP message using the
10 multicast device address from the first IGMP message.

24. The device of claim 23, wherein the multicast device address is a multicast host address, and wherein the second IGMP message is an IGMP report message.

15 25. The device of claim 23, wherein the multicast device address is a multicast router address, and wherein the second IGMP message is an IGMP query message.

-32-

5 26. A device for sending IGMP messages in a communication system, the device comprising:

 receiving logic operably coupled to receive a plurality of IGMP messages over an interface, wherein each IGMP message received over the interface is one of an IGMP version 1 message and an IGMP version 2 message; and

10 sending logic operably coupled to send an IGMP version 1 message over the interface if at least one of the plurality of IGMP messages received over the interface is an IGMP version 1 message.

15 27. The device of claim 26, wherein the sending logic is operably coupled to send an IGMP version 2 message over the interface if and only if each of the plurality of IGMP messages received over the interface is an IGMP version 2 message.

5 28. A program product comprising a computer readable medium having embodied
therein a computer program for forwarding multicast packets by a module in a
communication system having a plurality of cooperating modules, the module including at
least one network interface for supporting directly connected multicast devices and an
inter-module communication interface for communicating with remote modules, the
10 computer program comprising:

receiving logic programmed to receive an IGMP message from a remote module
over the inter-module communication interface; and

snooping logic programmed to determine that the remote module supports a
multicast stream based upon the IGMP message received from the received IGMP
15 message.

29. The program product of claim 28, wherein the snooping logic is programmed to
add the remote module to a forwarding interface list that indicates all network interfaces
and remote modules associated with the multicast stream.

20 30. The program product of claim 28, further comprising:

switching logic programmed to receive multicast packets associated with the
multicast stream from a network interface and forward the multicast packets to the remote
module over the inter-module communication interface

-34-

5 31. A program product comprising a computer readable medium having embodied therein a computer program for sending IGMP messages by a device in a communication system, the computer program comprising:

 receiving logic programmed to receive a first IGMP message including a multicast device address; and

10 sending logic programmed to send a second IGMP message using the multicast device address from the first IGMP message.

32. The program product of claim 31, wherein the multicast device address is a multicast host address, and wherein the second IGMP message is an IGMP report message.

33. The program product of claim 31, wherein the multicast device address is a multicast router address, and wherein the second IGMP message is an IGMP query message.

-35-

5 34. A program product comprising a computer readable medium having embodied
 therein a computer program for sending IGMP messages by a device in a communication
 system, the computer program comprising:

 receiving logic programmed to receive a plurality of IGMP messages over an
 interface, wherein each IGMP message received over the interface is one of an IGMP
10 version 1 message and an IGMP version 2 message; and

 sending logic programmed to send an IGMP version 1 message over the interface if
 at least one of the plurality of IGMP messages received over the interface is an IGMP
 version 1 message.

15 35. The program product of claim 34, wherein the sending logic is programmed to
 send an IGMP version 2 message over the interface if and only if each of the plurality of
 IGMP messages received over the interface is an IGMP version 2 message.

10

[illegible]